From: POULSEN Mike
To: Eric Blischke/R10/USEPA/US@EPA
Cc: Chip Humphrey/R10/USEPA/US@EPA; ANDERSON Jim M; MCCLINCY Matt
Subject: RE: DEQ Hot Spot Questions
Date: 02/19/2010 09:22 AM

Eric -

This is about what I expected. In fact, it will end up being worse.

Just looking at cancer effects from individual congeners, where there is likely little dispute over what is a hot spot, we end up having hot spots just about everywhere (depending on the exposure pathway assumptions). This is not new; it is something we can tell looking at fish tissue data. I mentioned this at the AOPC meeting with the LWG last year at the airport.

The "it gets worse" part comes from adding the breastfeeding pathway. This will increase the HQ for PCBs by a factor of 24, and lower the hot spot level accordingly. Notice that you already had to use exposure scenarios with the low 17.5 g/day ingestion rate because the LWG's model can't get to acceptable levels at higher fish ingestion rates. We are pretty much left with anything exceeding background levels of PCBs in sediment constituting potential hot spot levels.

All this bad news from the risk assessment just means you'll have challenging feasibility issues to deal with during the FS. We won't be able to clean up all the hot spot areas.

- Mike

-----Original Message-----
From: Blischke.Eric@epamail.epa.gov
[mailto:Blischke.Eric@epamail.epa.gov]
Sent: Thursday, February 18, 2010 4:38 PM
To: POULSEN Mike
Cc: Humphrey.Chip@epamail.epa.gov
Subject: RE: DEQ Hot Spot Questions

This is complicated. I attempted a couple of maps.

The first map is for PCB 126 (an individual carcinogen). The acceptable risk level is 10-6; the hot spot level is 10-4. The PRGs on the recently received tables at the 10-4 risk level are 3.8 x 10-6 mg/kg or 0.004 ug/kg (142 g/day; high bioaccumulation fish) and 7.0 x 10-7 mg/kg or 0.0007 ug/kg (142 g/day; smallmouth bass).

The second map is for total aroclors. The hot spot level is 10X the acceptable risk level based on an HQ = 1. Based on the PRG table, this is equivalent to a total aroclor concentration of 190 ug/kg (17.5 g/day - low bioaccumulation fish) and 60 ug/kg (17.5 g/day - high bioaccumulation fish).

Does this make sense? The map presented by the LWG yesterday used hilltopping and showed that only three small areas (OSM, Gunderson and Swan Island Lagoon) were hot spots. These maps show something different. Did I miss something here?

Eric

(See attached file: PCB126HotSpotCarc.bmp)(See attached file: ArochlorHotSpotNon-Carc.bmp)

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|"MCCLINCY Matt" <MCCLINCY.Matt@deq.state.or.us>, "ANDERSON Jim M"
<ANDERSON.Jim@deq.state.or.us> |

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Date: 02/18/2010 03:59 PM

Subject: RE: DEQ Hot Spot Questions

Eric -

Your questions are actually a bit more complicated than you might realize.

The definition of a hot spot refers to individual carcinogens and noncarcinogens. A carcinogen is defined in rule as a substance. "Substance" is not defined in rule. It does not necessarily correspond to an individual chemical. Ecology had similar ambiguity in their rules. A couple of years ago, after a lawsuit, they revised their rules to be very explicit that for dioxins, PCBs, and cPAHs, you sum the risk, and then apply the acceptable risk level. DEQ uses a different approach. We apply our acceptable risk level for individual carcinogens to individual dioxin congeners. For PCBs, if you have congener data, we apply the acceptable risk level for individual carcinogens to individual PCB congeners. However, if you have only total PCB data (Aroclors), then we apply the acceptable risk level for individual carcinogens to the total concentration, with the assumption that the risk could be driven by a single congener. We have consistently applied these approaches for the last ten years.

Defining hot spots for noncarcinogenic effects of dioxins and PCBs has not been an important issue until now. Until recently, we did not have an RfD for dioxins, and cancer risks always drove cleanup at PCB sites. But if we add the breastfeeding pathway, we know that the concentration resulting in an acceptable noncancer risk will be the same concentration that is acceptable for cancer risks. Yet as you know, the definition of high concentration hot spot is different for carcinogens and noncarcinogens. So, how do we apply our hot spot definition? It does not necessarily follow from our handling of carcinogenic effects. First, RfDs are based on exposure to Aroclors, not individual congeners. It may not be appropriate to apply the PCB RfD to individual congeners. Second, we have separate acceptable risk levels for individual carcinogens (1 x 10-6) and multiple carcinogens (1 x 10-5), but for noncarcinogens, the acceptable hazard quotient for individual noncarcinogens and the acceptable hazard index for multiple noncarcinogens is the same (1). So for noncarcinogens, there is essentially no difference in how we evaluate the acceptability of risk from one chemical or multiple chemicals that act in a similar manner. I do not know if this will influence whether we view PCBs as a single substance. DEQ management has not addressed the issue of hot spots for noncarcinogens such as PCBs. From a technical perspective, I believe the toxes would view PCBs as a single substance.

Regarding hilltopping, Matt says that the approach used at the Catellus site was used only once, and we no longer will allow that type of evaluation. Since the Catellus project, DEQ has consistently established potential hot spots based on concentrations at individual sample locations.

- Mike

-----Original Message-----
From: Blischke.Eric@epamail.epa.gov
[mailto:Blischke.Eric@epamail.epa.gov]
Sent: Wednesday, February 17, 2010 4:00 PM
To: POULSEN Mike
Cc: MCCLINCY Matt; ANDERSON Jim M
Subject: DEQ Hot Spot Questions

At our risk management meeting with the LWG this afternoon, the LWG asked some questions about the identification of hot spots.

We clarified that PCBs are viewed as mixtures and that the hot spot threshold would be based on 100x the acceptable risk level for individual chemicals (10-6) - i.e., individual congeners. Are hot spots calculated at the 100x the acceptable risk level for multiple chemicals (10-5) for total PCBs? Based on my reading of the hot spot definition, it seems that hot spots are established for individual chemicals only (congeners) and not mixtures (total PCBs).

For non-cancer risk, I assume that the hot spot threshold would be based on 10 x the acceptable risk level for individual congeners and not total

PCBs.

The other question that came up had to do with point by point estimates vs. hill topping. We stated in our direction to the LWG on hot spots that the determination should be on a point by point basis. The LWG stated that they felt DEQ rules allowed for using a hilltop value. I believe this came up on the Catellus Site some years ago and that DEQ allowed hill topping even though it was inconsistent with the intent of the statute.

Mike, can you please respond to these questions and add any additional clarifying information you think is necessary.

Thanks, Eric